AMENDMENTS TO THE CLAIMS

Listing of Claims:

1.   (Currently Amended) A method of inverse quantizing quantized signal samples of an image during image decompression comprising:

applying a process to transform the quantized signal samples from a first domain to a second domain, the transform process comprises an inverse discrete wavelet transform (IDWT) to decompose signal samples into two or more subbands; and

during the transform process, filtering quantized signal samples by applying scaled filter coefficients, the signals samples first being filtered along the image in a first direction and then along the image in a second direction, so that at the completion of the transform process of the image, at least a selected portion of the transformed signal samples are inverse quantized, wherein the inverse quantization is integrated into the IDWT process, wherein scaling in a first mutually orthogonal direction comprises:

applying a first scale factor to each filter coefficient in the low pass filtering operation to subbands LL_k and HL_k;

applying a second scale factor to each filter coefficient in the high pass filtering operation to subband LH_k; and

applying a third scale factor to each filter coefficient in the high pass filtering operation to subband HH_k;

HL, HH, LH, and LL in the kth level, respectively.

2.   (Original) The method of claim 1, wherein the first direction and the second direction are mutually orthogonal.

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3.   (Previously Presented) The method of claim 1, wherein the first domain is the frequency domain, the second domain is the spatial domain, the first direction is one of row-wise and column-wise, and the second direction is the other of row-wise and column-wise.

4.   (Original) The method of claim 3, wherein the IDWT comprises a two-dimensional IDWT.

5.   (Original) The method of claim 4, wherein the inverse transform process comprises combining low pass and a high pass subbands.

6.   (Original) The method of claim 4, wherein the subbands being combined were decomposed by biorthogonal spline filters.

7.   (Original) The method of claim 6, wherein the spline filters were 9-7 biorthogonal spline filters.

8.   (Original) The method of claim 4, and further comprising applying another level of filtering and scaling to the LL subband of the transformed image.

9.   (Original) The method of claim 4, and further comprising applying a kth level of filtering and scaling by successively applying, k-1 times, filtering and scaling to the LL subband of the transformed image, k being a positive integer.

10.   (Currently Amended) The method of claim 3, wherein scaling in a first mutually orthogonal direction comprises:

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applying the <u>first</u> scale factor $\sqrt{Q(LL_k)}$ to each filter coefficient in the low pass filtering operation to subbands LL_k and HL_k;

applying the <u>second</u> scale factor $\dfrac{Q(LH_k)}{\sqrt{Q(LL_k)}}$ to each filter coefficient in the high pass filtering operation to subband LH_k; and

applying the <u>third</u> scale factor $\dfrac{Q(HH_k)\sqrt{Q(LL_k)}}{Q(HL_k)}$ to each filter coefficient in the high pass filtering operation to subband HH_k;

$Q(HL_k)$, $Q(HH_k)$, $Q(LH_k)$, and $Q(LL_k)$ being the quantization thresholds of the subbands, HL, HH, LH, and LL in the kth level, respectively, and $Q(LL_k)$ being equal to 1, when level k is less than K.

11.   (Currently Amended) The method of claim 10, wherein scaling in a second direction comprises:

applying the <u>first</u> scale factor $\sqrt{Q(LL_k)}$ to each filter coefficient in the low pass filtering operation over the LL_k and LH_k subband; and

applying the <u>second</u> scale factor $\dfrac{Q(HL_k)}{\sqrt{Q(LL_k)}}$, to each filter coefficient in the high pass filtering operation over the HL_k and HH_k subband;

$Q(HL_k)$ and $Q(LL_k)$ being the quantization thresholds of the subbands, HL and LL in the kth level, respectively, K being the total level of the DWT, k being a positive integer less than or equal to K, $Q(LL_k)$ being 1 when k is less than K, and LL_1 being the input image.

12.   (Original) The method of claim 3, wherein the IDWT comprises a multidimensional IDWT.

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13.   (Original) The method of claim 3, wherein the method of inverse quantization is applied to successive video image frames.

14.   (Original) The method of claim 3, wherein the signal samples are inverse quantized by truncating the signal sample values.

15.   (Original) The method of claim 3, wherein the signal samples are inverse quantized by rounding the signal sample values.

16.   (Original) The method of claim 1, wherein the at least a selected portion of the transformed signal samples comprises an entire image of transformed signal samples.

17.   (Currently Amended) A device comprising:

an integrated circuit;

said integrated circuit having input ports to receive signal samples associated with at least one image;

said integrated circuit including digital circuitry;

said digital circuitry having a configuration to apply a process to transform the signal samples from a first domain to a second domain and during the transform process, filtering signal samples, by first applying scaled filter coefficients to signal samples along the image in a first direction and then applying scaled filter coefficients to signal samples along the image in a second direction, at least a selected portion of the transformed signal samples are inverse quantized, the transform process comprises an inverse discrete wavelet transform (IDWT) to decompose signal samples into two or more subbands, wherein the inverse

quantization is integrated into the IDWT process, wherein scaling in a first mutually orthogonal direction comprises:

applying a first scale factor to each filter coefficient in the low pass filtering operation to subbands LL_k and HL_k;

applying a second scale factor to each filter coefficient in the high pass filtering operation to subband LH_k; and

applying a third scale factor to each filter coefficient in the high pass filtering operation to subband HH_k;

HL, HH, LH, and LL in the kth level, respectively.

18.   (Original) The device of claim 17, wherein the first direction and the second direction are mutually orthogonal.

19.   (Previously Presented) The device of claim 17, wherein the first domain is the frequency domain, the second domain is the spatial domain, the first direction is one of row-wise and column-wise, and the second direction is the other of row-wise and column-wise.

20.   (Original) The device of claim 19, wherein the IDWT comprises a two-dimensional IDWT.

21.   (Original) The device of claim 20, wherein the transform process comprises combining low pass and a high pass subbands.

22.   (Original) The device of claim 19, and further comprising applying a second level of filtering and scaling to the LL subband of the transformed image.

23.   (Original) The device of claim 19, and further comprising applying a kth level of filtering and scaling by successively applying, k-1 times, filtering and scaling to the LL subband of the transformed image, k being a positive integer.

24.   (Currently Amended) An article comprising: a storage medium, said storage medium having stored thereon, instructions, that when executed by a system to execute said instructions, results in:

applying a process to transform signal samples associated with at least one image from a first domain to a second domain, the transform process comprises an inverse discrete wavelet transform (IDWT) to decompose signal samples into two or more subbands; and

during the transform process, filtering signal samples, by first applying scaled filter coefficients to signal samples along the image in a first direction and then applying scaled filter coefficients to signal samples along the image in a second direction, so that at the completion of the transform process of the image, at least a selected portion of the transformed signal samples are inverse quantized, wherein the inverse quantization is integrated into the IDWT process, wherein scaling in a first mutually orthogonal direction comprises:

applying a first scale factor to each filter coefficient in the low pass filtering operation to subbands LL_k and HL_k;

applying a second scale factor to each filter coefficient in the high pass filtering operation to subband LH_k; and

applying a third scale factor to each filter coefficient in the high pass filtering operation to subband HH_k;

HL, HH, LH, and LL in the kth level, respectively.

25.   (Previously Presented) The article of claim 24, wherein the first domain is the frequency domain, the second domain is the spatial domain, the first direction is one of row-wise and column-wise, and the second direction is the other of row-wise and column-wise.

26.   (Original) The article of claim 25, wherein the IDWT comprises a two-dimensional IDWT.

27.   (Original) The article of claim 24, wherein the transform process comprises combining low pass and a high pass subbands.

28.   (Original) The article of claim 25, and further comprising applying a second level of transformation and scaling to the LL subband of the transformed image.

29.   (Original) The article of claim 25, and further comprising applying a kth level of filtering and scaling by successively applying, k-1 times, filtering and scaling to the LL subband of the transformed image, k being a positive integer.

30.   (Previously Presented) A method of inverse quantizing quantized signal samples of an image during image decompression comprising:

applying a process to transform the quantized signal samples from a first domain to a second domain; and

during the transform process, filtering quantized signal samples by applying scaled filter coefficients, the signals samples first being filtered along the image in a first direction and then along the image in a second direction, so that at the completion of the transform process,

of the image, at least a selected portion of the transformed signal samples are inverse quantized,

scaling in a first mutually orthogonal direction comprises:

applying the scale factor $\sqrt{Q(LL_k)}$ to each filter coefficient in the low pass filtering operation to subbands LL_k and HL_k;

applying the scale factor $\dfrac{Q(LH_k)}{\sqrt{Q(LL_k)}}$ to each filter coefficient in the high pass

filtering operation to subband LH_k; and

applying the scale factor $\dfrac{Q(HH_k)\sqrt{Q(LL_k)}}{Q(HL_k)}$ to each filter coefficient in the high

pass filtering operation to subband HH_k;

Q (HL_k), Q (HH_k), Q (LH_k), and Q (LL_k) being the quantization thresholds of the subbands, HL, HH, LH, and LL in the kth level, respectively, and Q (LL_k) being equal to 1, when level k is less than K.

31.   (Previously Presented) A method of inverse quantizing quantized signal samples of an image during image decompression comprising:

applying a process to transform the quantized signal samples from a first domain to a second domain; and

during the transform process, filtering quantized signal samples by applying scaled filter coefficients, the signals samples first being filtered along the image in a first direction and then along the image in a second direction, so that at the completion of the transform process,

of the image, at least a selected portion of the transformed signal samples are inverse quantized,

scaling in a second direction comprises:

applying the scale factor $\sqrt{Q(LL_k)}$ to each filter coefficient in the low pass

filtering operation over the LL_k and LH_k subband; and

applying the scale factor $\dfrac{Q(HL_k)}{\sqrt{Q(LL_k)}}$, to each filter coefficient in the high pass

filtering operation over the HL_k and HH_k subband;

Q (HL_k) and Q (LL_k) being the quantization thresholds of the subbands, HL and

LL in the kth level, respectively, K being the total level of the DWT, k being a positive

integer less than or equal to K, Q (LL_k) being 1 when k is less than K, and LL_1 being the

input image.